NPIC/TSSG/RED-086-70
19 MAR 1970

MEMORANDUM FOR: Director, National Photographic Interpretation Center

SUBJECT : Proposed Contract with [redacted] 25X1
for Technical Support Services in Photoscience

1. This memorandum requests the approval of funds for an R&D contract. The specific request is stated in Paragraph 7.

2. The broad diversity of problems calling for solutions by a small staff requires the Exploratory Laboratory to retain outside technical services. Frequently, the Laboratory must make project recommendations involving highly specialized chemical disciplines which transcend the staff capabilities. Contractor services provide an efficient means of temporarily expanding the staff's technical capabilities by gaining short-term access to experts in specialized chemistry, who, on the basis of continuing need, could not be justified as full-time additions to the staff, expanding the breadth and depth of science and technology that can be applied to Center problems, and increasing the staff's technical awareness through association with experts.

3. To minimize the technical risks associated with R&D projects, we want to gain low cost feasibility assessments of new ideas and techniques prior to undertaking costly formal investigations. The proposed program is directed toward acquiring professional study and laboratory technical services in the specialized areas of chemistry and physics related to photoscience, along with instrumentation and analysis to support exploratory/feasibility investigations to guide our R&D.

a. Growing Center interest in non-silver/heat processed photographic materials requires our detailed knowledge in highly specialized terms of photo-dissociation, free radical, photo-polymerization, dry forming, and semi-conductor chemistries to permit thorough evaluation of proposals. A current problem involves proposals received from [redacted] for R&D of new free 25X1
radical films, an area of specialized chemistry where staff expertise is lacking. In addition, the unexplored potential of chemical image manipulation, as an adjunct to digital and optical techniques, will be investigated by the contractor. Here interest resides in the photo-chemical changes affected through exposure modifications, custom formula developers and localized processing to remedy such imagery defects as smear, defocus, double imagery and to further investigate image recovery from stripped film base.

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b. The acquisition of an electron microscope by the Exploratory Laboratory requires training members of the Laboratory in its operation and in the investigation of the structure of images produced by non-silver/heat processed photographic systems. Application of a scanning electron microscope, owned by the contractor, to problems in exploitation technology commands high interest. This instrument, which combines a great depth of field with the high magnification capability of electron microscopes, has potential for providing unique views of imagery for purposes of analysis and possibly interpretation.

c. Various other functions, related to the specialized chemistries of interest, require study on a spot basis. These include state-of-the-art surveys, laboratory tests, chemical and photomicrographic analysis, training in advanced theory and techniques, and general consulting and advisory services. These are envisioned as supporting the main task of this proposed program, namely the application of outside expertise in specialized chemistry to guide our R&D in non-silver/heat processed photographic systems and in chemical image manipulation. Levying these supporting tasks on the recommended contractor yields two advantages:

(1) we realize quick reaction, compared with our procuring equipments and/or developing expertise "from scratch"; and

(2) we avoid accummulating "white elephant" equipment in-house as an aftermath of one-time feasibility tests.

d. Problems will be posed to the contractor resulting in brief task proposals from [redacted] describing approach, cost and delivery. The initial task, of an estimated 6 months duration, will require the generation of a manual which elucidates the specialized chemistries of non-silver/heat processed photo systems. In addition, it will define theoretically sound chemical modifications which yield practical R&D approaches for improving these systems. Supporting tasks pertaining to the previously noted functions (3.2.b.&c.) will be levied during the contract. The contractor will proceed upon task authorization and conclude with a report, handbook, samples, breadboard and NPIC briefing, as specified by task. He proposes to provide 1000 man hours over 12 months for [redacted] schedule and risk will be identified in individual task proposals. Authorized tasks will relate to the R&D Program through the Reproduction Materials and Processes, and the Image Analysis and Manipulation Programs. 25X1 25X1

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e. Supporting technical services retained under the proposed contract will be available to all Center components. The Laboratory will assist where necessary in framing requirements to affect maximum technical communication with the contractor.

4. Two contractors, [redacted] 25X1
25X1 [redacted] were evaluated. [redacted] is the recommended contractor based on its personnel, facilities, capabilities in chemistry and photoscience, and overall research attitude. Its staff is highly qualified in the application of basic science to practical problem solving. Significant to our interests is their work in photoscience which gave Xerography its commercial start. Other--if less dramatic--successes have also been realized in graphic arts, silver halide, diazo and unconventional photo processes. Some indication of
25X1 [redacted] emphasis on practical innovative applications of science is obtained from the record of [redacted], the proposed principal
25X1 investigator, and [redacted], his Division Chief, who hold 16 and 117 patents respectively. Technical papers, texts, and additional
25X1 patents abound in biographies of [redacted] personnel of interest. [redacted] pos-
25X1 sesses extensive in-house library facilities for surveys-of-the-art. In addition, it is located adjacent to the campus of [redacted]
25X1 [redacted] maintains the central world-
25X1 wide reference headquarters for published chemical literature. This and the library at [redacted] are easily accessible to [redacted]
25X1 presents an enviable array of sophisticated chemical physics-type instrumentation. Much lies in permanent inventory, but other equipment is furnished by industrial firms who wish pre-market performance evaluation
25X1 by [redacted] Both categories are available to explore new paths for solving our problems.

5. Successful realization of our technical and contractual need will result in a request to continue this program in FY-71. Present plans envision a follow-on level-of-effort for [redacted] Throughout 25X1
this program it is envisioned that only exploratory and feasibility tasks will be pursued. Should a task result dictate a need for significant project effort, this will give rise to a separate project which may or may not be performed by [redacted] 25X1

25X1 6. [redacted] will be project officer for this
25X1 contract. [redacted] is appropriate for this work; the Project Officer will assign security classifications to specific tasks and resultant end items.

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7. It is requested that a contract be negotiated with [redacted] in accordance with their attached proposal, not to exceed [redacted] 25X1 25X1

25X1

[redacted]

Chief, Technical Services & Support Group,
NPIC

Attachments:

25X1 1. Proposal [redacted]
2. Form 24[redacted]

APPROVED: [redacted] 3 APR 1970

ARTHUR C. LUNDAHL
Director
National Photographic Interpretation Center

Date

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